

**REPLY**

The Examiner withdrew the previously indicated allowability of claims 6-10, 12, and 17. The Examiner rejected claims 1-5 under 35 USC §102(b) as being anticipated by Shurgan. The Examiner rejected claims 6-15 and 22-23 under 35 USC §102(a) as being anticipated by Eldred et al. The Examiner rejected claims 18-20 under 35 USC §103(a) as being unpatentable over Wyndham in view of Shurgan. The Examiner rejected claims 16 and 21 under 35 USC §103(a) as being unpatentable over Brais in view of Shurgan. The Examiner rejected claim 17 under 35 USC §103(a) as being unpatentable over Miller in view of Eldred et al.

Shurgan et al (USP 3,988,633) discloses a fluorescent lamp with grooves. The purpose of the grooves is to increase the lumen output of the lamp. Due to the presence of the grooves, at least a portion of the arc stream tends to travel a generally sinuous path along the length of the envelope where the grooves exist. This increases the arc stream length.

Eldred et al (WO 01/37675 A2) discloses a sterilizer for liquids having a sheath with an internal configuration providing protuberances over which the liquid to be sterilized flows. The fluid flows through the narrow annular gap between the fluorescent tube 34 and the corrugated sheath 26.

Wyndham et al (3,791,790) discloses a portable purification device with a radiation lamp used as a source of germicidal rays. Untreated fluid travels through a spiral path formed by the annular space between the cylinder wall of the chamber and a concentric transparent cylinder as guided by the spiral distributor. After numerous spirals in turbulent motion around the tube, the sterilized fluid leaves the chamber.

Brias (USP 5,833,740) discloses an air purify using a vacuum ultraviolet source and a germicidal ultraviolet source. A separate turbulence generator 16 having baffles 36 to generate air turbulence is also disclosed.

Miller (USP 6,053,968) discloses a portable room air filter having a germicidal ultraviolet light source mounted in a chamber and a fan assembly.

Claims 1-5 have been canceled. Claims 6, 11, 12, 17, 22, and 23 have been amended to obviate the Examiner's rejections. Claims 6, 12, 17, and 23 have been amended to recite a transparent envelope having an exterior non-uniform surface contour enclosing said cylindrical ultraviolet lamp. The specification has also been amended to provide an antecedent basis for this amendment to the claims. The amendment to the specification does not add any new matter. In view of the specification as a whole, in combination with Fig. 1 clearly illustrating the envelope 12 being transparent such that the ultraviolet lamp 16 is clearly

viewed therethrough, the envelope 12 is clearly disclosed as being transparent. Accordingly, no new matter has been added.

Claim 6, as amended, is not anticipated by Eldred et al. Eldred et al discloses a sheath 26 made of stainless steel. *Eldred et al, page 6, lines 7-8.* Additionally, Eldred et al discloses that milk flows through the sterilizer 10 passing through the narrow annular gap between the fluorescent tube 24 and the corrugated sheet 26. *Eldred et al, page 6, lines 14-15.* Therefore, the sheath 26, being made of stainless steel, is not transparent. Additionally, there would be no reasonable rationale to render the sheath 26 transparent because the fluid flows between the narrow annular gap between the fluorescent tube 34 and the corrugated sheath 26. Therefore, there would be no motivation whatsoever to replace the stainless steel corrugated sheath 26 with a transparent material.

Claim 11 has been amended to recite that the fluid to be purified flows over the **exterior** non-uniform surface contour. The **specific recitation that the fluid flows over the exterior non-uniform surface contour** of the ultraviolet lamp is contrary to the disclosure and teachings of Eldred et al. In Eldred et al, the fluid flows over the interior of the corrugated sheet 26 in a narrow annular gap between the fluorescent tube 34 and the corrugated sheet 26. The present invention is specifically reciting that the fluid flows over the exterior non-uniform

surface contour, permits a self contained ultraviolet lamp to be placed within a chamber having free flowing water without the confines of the more complicated structure disclosed in Eldred et al. The present invention therefore provides a simpler structure that can readily be adapted to a variety of different existing water purification systems without any modifications.

Claim 12 has been similarly amended.

Claim 17 has been amended to specifically recite a transparent envelope placed over the cylindrical lamp.

Claim 22 has been amended to specifically recite that the fluid flows over the exterior non-uniform surface contour.

Claim 23 has been amended to recite that the tubular envelope is transparent and that the fluid to be purified flows over the exterior non-uniform surface contour of the tubular transparent envelope. Additionally, claim 23 specifically recites at least one end cap placed on said tubular transparent envelope, sealing said cylindrical ultraviolet lamp within the tubular transparent envelope wherein the fluid to be purified cannot enter between said cylindrical ultraviolet lamp and said tubular transparent envelope. This structure, in preventing the flow of fluid between the cylindrical ultraviolet lamp and the tubular transparent envelope, is not disclosed in Eldred et al. Eldred et al specifically teaches that the fluid flow is between the

fluorescent tube 34 and the corrugated sheet 26. Accordingly, amended claim 23 cannot be anticipated by Eldred et al.

Claim 24 has been added to recite that the longitudinal axis of the tubular transparent envelope is placed transverse to the flow direction of the fluid. In Eldred et al, the longitudinal axis of the fluorescent tube 34 is coaxial with the sheath 26 and parallel to the direction of flow of the fluid. The structure disclosed in Eldred et al, while convenient for some relatively small scale sterilizer applications, such as in sterilizing milk, in large volume or flow applications such as waste water treatment, such a structure is not practical or a convenience. As recited in claim 24, the longitudinal axis of the tubular transparent envelope being positioned transverse to the directional flow of the fluid facilitates use of a plurality of ultraviolet lamps as well as the ability to access the lamps more easily from a side of the chamber containing the waste water flow.

Claim 16 recites an air purification system comprising an ultraviolet lamp having an exterior non-uniform surface contour placed within a room. In rejecting claim 16, the Examiner indicated that it would be obvious to one of ordinary skill in the art to replace the ultraviolet lamp of Brais with a lamp containing grooves as taught by Shurgan because Shurgan teaches that these lamps permit a longer effective arch stream length in

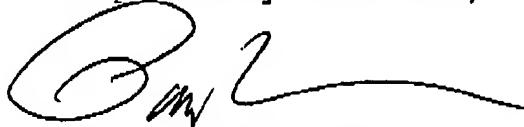
the same envelope, thereby increasing the wattage loading of the lamp.

While the desire to use a more efficient or higher wattage lamp would possibly be advantageous in the portable room air purifier disclosed in Miller, there is no suggestion whatsoever of any advantage or motivation for utilizing a fluorescent lamp with envelope grooves as disclosed in Shurgan et al. There would be no motivation or rationale to use a fluorescent lamp with envelope grooves in a portable room air purifier as disclosed in Miller absent the teachings of the present application. There is no disclosure in Shurgan et al that indicates any advantage of the envelope grooves in the fluorescent lamp being beneficial for creating turbulent flow. The only advantage taught in Shurgan et al of the envelope grooves is to increase the plasma arch stream length, thereby changing the electrical and luminous properties of the lamp. There is no basis or suggestion, motivation or reasonable rationale as to why the teachings of the envelope grooves for the purpose of increasing the plasma arch stream length would teach or suggest the use of envelope grooves in air purifier systems so as to create turbulent flow. Clearly, the Examiner is utilizing impermissible hindsight in combining Miller and Shurgan et al and is utilizing the Applicant's own disclosure in an effort to rationalize the advocated combination. Claim 16

is therefore believed to be allowable over the references cited by the Examiner.

Accordingly, it is respectfully requested that the Examiner reconsider the present application and again indicate allowable subject matter.

Respectfully submitted,



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